

Original paper

Cholechooduodenostomy in the Management of Common Bile Duct Stones

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Abstract

Background: Cholechooduodenostomy (CDD) is the operative procedure for choledocholithiasis in the presence of a dilated common bile duct (CBD). It has been reported as the most effective procedure of CBD stones than T-tube drainage.

Aim: To evaluate the outcome of Cholechooduodenostomy in our center.

Patients and Methods: This is a prospective study to assess the aforementioned issues analyzing our seven years (March 2001-June 2008) experience in Al-Kadhimiyyah Teaching Hospital.

CDD was performed in 13 patients (12 female: 1 male) with age between 40-60 years.

Results & discussion: CBD stones were the only indication in all patients with associated cholecystitis, in 12 patients (92.2%) and biliary colic in 1 patient (7.7%) for recurrent stones. Abdominal sonogram showed dilated CBD with single or multiple stones. The diameter of CBD varies from 15-30 mm with stone size being ranged from 10-25 mm.

No early post-operative complication. Only one patient had recurrent cholangitis (sump syndrome).

Conclusion: CDD is highly effective treatment of choledocholithiasis in all age group with low morbidity and mortality provided a wide anastomosis is accomplished.

Keywords: CBD Stones, Cholechooduodenostomy, CDD management

Introduction

Choledocholithiasis exists in approximately 15% of the patients with gall stones and is present in 3-10% of those undergone cholecystectomy.

Side to side CDD was originally described by Reidel in Europe in 1888 ⁽¹⁾. It is a well-established procedure used for internal drainage of an obstructed and dilated CBD ⁽²⁾. It is a safe and effective method for the treatment of CBD stones ^(3,4).

The principle indications for a CDD have been benign obstructive lesions of the CBD, typically distal stricture and recurrent CBD stones recalcitrant to endoscopic management. Three surgical techniques are described: side to side CDD, Roux en Ycholechojuenostomy (CDJ) or an end to side CDD. There has been controversy over the years as to which of

these procedures is the best. While it is relatively simple to perform laparoscopically, the primary concern regarding a side to side CDD has been the potential development of (sump syndrome). Sump syndrome is the stagnation of biliary contents in the poorly drained distal stump of the biliary tree resulting in chronic inflammation, intermittent abdominal pain and recurrent episodes of cholangitis as well as the possible development of liver abscess, the incidence appears to be low and is related more to the occasional CDD anastomotic stenosis rather than true sump syndrome ⁽⁵⁾.

Application of laparoscopic approaches in biliary surgery began in the late 1980s ⁽⁵⁾. Proper drainage of CBD is essential to reduce the chance of residual or recurrent stones ⁽⁶⁾.

Side to side CDD is both the best

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procedure as well as prophylaxis against common duct stones, this even in the era of endoscopic papillotomy and biliary lithotripsy.

Evaluation of the CDD as a substitutional interventional procedure of CBD stones in our center Cholecholithiasis is a common problem in surgeon's practice. Proper drainage of the common bile duct is essential to reduce the chance of residual stones and recurrent stones. The paper highlights the surgical management of cholecholithiasis by side to side choledochoduodenostomy and the post-surgical complications.

Materials and Methods

The prospective study of Cholechooduodenostomy (CDD) was performed in 13 patients (12 female, 1 male), female to male ratio (12:1) with age 40-60 years in Al-Kadhimiyyah Teaching Hospital.

Technique of lateral CDD: Side to side CDD is the procedure of choice for all indications except iatrogenic injury of CBD and controversial indication for malignant obstruction. Complete division of CBD compromises blood supply to both ends of the duct and may predispose to ischemic stricture.

After cholecystectomy, Kocher maneuver to mobilize the duodenum and pancreas, the CBD is opened longitudinally with scalpel at the supraduodenal part extending for 2-2.5 cm, complete removing the stones then longitudinal incision in the postbulbar part of duodenum for 2-2.5 cm then single layer triangulated anastomosis using 3-0 vicryl begin posteriorly and positioning the knots outside the anastomosis.

The anterior portion of the anastomosis is also performed with single interrupted suture. Close drain is placed in the area of anastomosis and removed in the third or fourth postoperative day.

Indications for CDD in our study:

1- Multiple CBD stones in 10 patients

(76.9%)

2- Impacted stone in the ampulla of Vater in 1 patient (7.7%).

3- Recurrent stone after previous cholecystectomy in 1 patient (7.7%).

4- Impacted stone in the cystic duct protruding to the CBD causing obstruction of the common hepatic duct (Mirizzi syndrome) in 1 patient (7.7%).

We have excluded the patients who:

1- had cholecholithiasis with single stone

2- Not impacted

3- CBD < 15 mm in diameter

4- Malignant obstruction

MRCP was done in 3 patients and showed dilated CBD with multiple filling defects in the lower part of the CBD.

Results

Records of 13 patients were reviewed.

There were (92.3%) 12 females, (7.7%) 1 male in my study as in Table 1.

Majorities 11 patients (84.6%) were undergone CDD for multiple CBD stones, 2 patients did CDD for impacted stone and recurrent stones after cholecystectomy as in Table 2.

Associated gall stones was seen in 12 cases (92.3%), 1 patient for recurrent stone (7.7%) as in Table 3.

Age incidence, 11 cases (84.6%) below age of 50 years, 2 cases (15.4%) above 50 years as in Table 4.

The mean postoperative hospital stay for those group of patients was (3-5) days. None of them had required re-exploration.

Those patients were followed up for 3 years, 3 patients (23%) were lost from follow up, the remaining (77%), none of them had bile leak (0%), none of them died in this period (0%). Only one case developed recurrent cholangitis (sump syndrome) in whom about 200 stones were removed from CBD, this case was diagnosed preoperatively by doing MRCP and was treated conservatively postoperatively.

The data indicates that no re-exploration

during follow up, zero mortality rate, and low morbidity, this leads us to concludes that CDD is the best procedure as well as prophylaxis against CBD stones.

Table 1. Male to Female incidence

Total	Male	Female
13 (100%)	1 (7.7%)	12 (92.3%)

Table 2. CBD stones incidence

Total	Patients with multiple CBD Stones	Patients with impacted CBD stone or recurrent stones after cholecystectomy
13 (100%)	11 (84.6%)	2 (15.4%)

Table 3. Gall stones incidence

Total	Associated gall stones	Recurrent stone
13 (100%)	12 (92.3%)	1 (7.7%)

Table 4. Age incidence

Total	Age below 50 years	Age above 50 years
13 (100%)	11 (84.6%)	2 (15.4%)

Table 5. Signs and Symptoms presented by CBD stones:

Signs and Symptoms	No. of Patients	Percentage
Abdominal Pain	13	100%
Jaundice	12	92.3%
Nausea and Vomiting	6	46.1%
Fever	7	53.8%
Associated gall stones	12	92.3%

Table 6. Value of Hepatic function tests in CBD stones patients:

Test	Mean Value	Range	Upper Normal
Total Bilirubin (mg/dl)	8.5	1.5-15	1.2
SGOT (UI/L)	155.6	60-210	46
SGPT (UI/L)	221	76-382	48
Alkaline Phosphatase (UI/L)	435	225-795	250

Discussion

The historical development of CDD was summarized by Madden and associates in 1970⁽⁸⁾.

The review of the relevant literature and the observations of the present study against that the indications for the CDD remain the same as those detailed by Degenshein⁽⁹⁾ in 1974 (except for malignant ones).

CDD has been recommended in the treatment of multiple calculi of CBD, retained or residual stones, hepatic stones, distal CBD stricture, ampullary stenosis, benign ampullary tumors (9), primary duct stones, recurrent CBD stones, dilated CBD more than 20 mm, failure of ERCP, non-availability of ERCP⁽¹⁰⁻¹⁴⁾.

While CDD is particularly recommended

for use in elderly patients⁽¹⁵⁾. It is also recommended in younger patients since a more aggressive therapy may be indicated in their often <more aggressive lithogenic diathesis >10.

Choledocholithiasis (multiple secondary, retained, recurrent, impacted) remain the sole indication in our series.

A study done in India, by Ajaz Malik and Khursheed Alam was published in 2012, this study was done for 270 cases, there were 4 cases had late death (1.77%) during follow up with absence of sump syndrome⁽⁸⁾.

The morbidity of CDD observed in our study as well as type of observed complications parallels those previously reported in this literature.

The difference of mortality rate in our study and that study was probably because

of larger numbers of patients involved in that study and elderly high risk group.

For better assessment and more accurate evaluation, the author prefers to implement this study on a large scale setting.

CDD can now done laparoscopically but in our study, only open CDD was performed.

Conclusion

Side to side choledochoduodenostomy is a safe effective definitive method of management of bile duct stones provided that the duct is more than 15 mm wide and few technical requirement that wide anastomosis is accomplished.

It can be a good substitutional procedure of ERCP in case of lack of the facility or of failure as the immediate and late postoperative complications were insignificant in our present series.

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